1. Phonemics

1.1 Syllable

The syllable consists of one vowel as syllable peak and consonants as optional onset and/or coda. The syllable is the minimal phonological unit that can occur in isolation. There are four non-suspect syllable patterns:

V	/'qɨ.a/	live
VC	/ma.'ɨm/	deep
CV	/'da/	already
CVC	/'kun/	if

Of these patterns CV and CVC are most common. V and VC are not found word initially.

1.2 Phonological word

A phonological word is a sequence of syllables marked by the occurrence of primary stress. One syllable particles do not carry primary stress. Phonological words of from one to six syllables have been observed.

/pa/	still (particle)
/'bɨy/	house
/'qu.bɨ/	monkey
/ka.'ka.naq/	'weapon'
/tim.ba.ba.'kɨ/	'thumb'
/pig.tu.a.ra.'an/	'taught'
/ki.na.ra.'ya.wan/	'best'
/pig.pa.ka.ra.ku.'a.qan/	'enlarged'

1.3 Length and stress

1.3.1 Stress carrying length[2]

Stress carries length in open syllables.

('ɨ:.sɨg)	child, boy
('pa:.naw)	walk
(ma.tɨ.'gɨ:)	stubborn

Length in these syllables can be the result of a reduction.

+	dala	('dɨ:)	carry, govern

But in the case of many long, open syllables no reduction has taken place.

+	ama	('qa:.ma)	mother
+	eseg	('qɨ:.sɨg)	boy

Where length occurs in closed syllables we presume the length to be the result of a reduction of two or more syllables.

+	alad	('qa:d)	fence
+	malalag	('mɨ:g)	yellow
+	kulun	('ku:n)	clay pot

1.3.2 Degree of stress

There are two degrees of stress, primary (') and secondary ("). A polysyllabic word has one primary stress and if there are three syllables preceding the primary stressed one, also a secondary stress.

("tim.ba.ba.'kɨ:)	thumb
("ka.qa.ba.'kan)	abaka plantation

1.3.3 Change of stress with affixation

a) Roots with penultimate stress and length retains the penultimate stress position when suffixed. The length follows the stress.

('ba:ŋaq)	(ba'na:qɨn)	bite
('ba:sa)	(ba'sa:ɨn)	read

b) When roots with penultimate stress and no length are suffixed, the stress moves to the ultimate position. The suffix gets length.

('qagbaq)	(qagbaq'ɨ:n)	destroy
('qatmuq)	(qatmuq'u:n)	fill

c) With prefixation no changes in stress and length occur.

('ba:sa)	(ma'ba:sa)	read
('qagbaq)	('magbaq)	destroy

1.3.4 Length is non-phonemic

Length does not survive without stress and is considered non-phonemic.

1.4 Interpretation of the semivowels (i) and (u)

When syllabic, (i) and (u) are interpreted as vowels /i/ and /u/. When non-syllabic they are interpreted as consonants /y/ and /w/.

Interpretation of syllabicity is dependent upon syllable pattern pressure.

When the semivowel follows a consonant which does not close the syllable, preceding it, the semivowel is interpreted as syllabic.

/bu.an/	'month'	/qa.gung/	'gong'
/ni.'a.naw/	'went'		

When the semivowel follows a consonant which closes the syllable preceding it, the semivowel is interpreted as non-syllabic.

/'ban.wa/	'land'	/ba.'lig.ya/	'sell'

When the semivowel is syllable initial, and followed by a vowel, it is interpreted as non-syllabic.

/qa.'sa.wa/	'spouse'	/'ya.ni/	'this'

When the semivowels is word final, following a vowel, it is interpreted as nonsyllabic.

/bɨy/	'house'	/'baw.baw/	'talk'

1.5 Phonemes: Contrast and description

There are nineteen phonemes in Kaagan-Kalagan: fourteen consonants and five vowels.[3] The consonants are: p, t, k, q, b, d, g, m, n, ŋ, s, l, w, y, and the vowels are: i, e, ɨ, a, u.

1.5.2 Description of phonemes and their allophones

/p/ is a voiceless bilabial stop.

(pɨ'ŋɨt)	/pɨ'ŋɨt/	beard
('ga:pus)	/'gapus/	tangle
('qapwap)	/'qapwap/	comfort

/b/ is a voiced bilabial stop.

('bɨŋɨt)	/'bɨŋɨt/	wrestle
(qa'bus)	/qa'bus/	finish
('qabwab)	/'qabwab/	weed

/t/ is a voiceless dental stop.

(ta'naw)	/ta'naw/	see
(qa'tu:n)	/qa'tun/	fire
('ma:wat)	/'mawat/	far

/d/ is a voiced dental stop.

(da'naw)	/da'naw/	lake

/d/ has the following allophones:

(d) is a voiced dental stop. It occurs word initial and word final. Intevocalically it is in free fluctuation with (r).

(r) is a voiced alveolar flap.

(da'naw)	/da'naw/	lake
(qa'ru:n)	/qa'run/	today
('ma:wid)	/'mawid/	hold

/k/ is a voiceless velar stop.

('kadtu)	/'kadtu/	go there
('ba:kaq)	/'bakaq/	mouth
('kallɨk)	/'kallɨk/	afraid

/g/ is a voiced velar stop.

(ga'bi)	/ga'bi/	night
('ba:ga)	/'baga/	coal
('kallɨg)	/'kallɨg/	hurry

/q/ is a glottal stop.

('qadtu)	/'qadtu/	there
('ba:qu)	/'baqu/	coconut husk
('bauq)	/'bauq/	smell

Utterance final all stops are unreleased.

The voiceless stops might have a slight aspiration word initially for emphasis.

('khɨbaw)	/kɨbaw/	carabao

/m/ is a voiced bilabial nasal.

('man)	/'man/	also
(di'mɨg)	/di'mɨg/	continue
('dɨmdɨm)	/'dɨmdɨm/	think

/n/ is a voiced alveolar nasal.

('na:ti)	/'nati/	calf
(ka'ni:lan)	/ka'nilan/	their
(ku'ma:n)	/ku'man/	eat

/ŋ/ is a voiced velar nasal.

(ŋa:n)	/'ŋan/	name
('ti:ŋɨg)	/'tiŋɨg/	voice
('tɨŋtɨŋ)	/'tɨŋtɨŋ/	see

/s/ is a voiceless alveolar fricative.

('sambuk)	/'sambuk/	one
('qisɨq)	/'qisɨq/	child
('ba:ras)	/'baras/	stick

/l/ is a voiced alveolar lateral.

(la'tiq)	/la'tiq/	field
(ka'li:laŋ)	/ka'lilaŋ/	joyful noise
('ku:bal)	/'kubal/	hard skin on hands

/y/ is a voiced unrounded palatal semivowel.

('yan)	/yan/	that
('bayad)	/'bayad/	buy
('bɨy)	/'bɨy/	house

/w/ is a voiced rounded semivowel.

('wak)	/'wak/	crow
('laway)	/'laway/	saliva
('kaw)	/'kaw/	you

Vowels [4]

/i/ has two allophones (i) and (ɪ).[5]

(i) is a high, close, unrounded vowel. It is found in long, stressed syllables preceding ŋ or another vowel.

(ta'pi:ŋɨn)	/ta'piŋɨn/	dirty
('bi:a)	/'bia/	princess

(ɪ) is a high slightly retracted unrounded vowel. It is found elsewhere.

('sɪlɪŋ)	/'siliŋ/	imitate
(pɪgsa'lɪlɪ)	/pigsa'lili/	replace

/ɛ/ has two allophones (æ) and (ɛ).
(æ) is a low open, unrounded front vowel. It is found in long, stressed syllables following /m/.

(mæ:)	/'mɛ/	old lady

(ɛ) is a mid open unrounded front vowel. It is found elsewhere.

('sɛlɛk)	/'sɛlɛk/	corner of mouth
(pa'sɛlɛ)	/pa'sɛlɛ/	make sign with eyes

/ɨ/ has two allophones (ə) and (ɨ).
(ə) is a mid close unrounded central vowel. It is found in stressed syllables word final preceding /q/.

(mi'wə:q)	/mi'wɨq/	lost
(mika'sə:q)	/mika'sɨq/	sinned

(ɨ) is a high close, unrounded central vowel. It is found elsewhere.

(pɨ'nɨt)	/pɨ'nɨt/	beard
('qisɨq)	/'qisɨq/	child

/a/ has two allophones (ɑ) and (ʌ).
(ɑ) is an open unrounded central vowel. It is found in stressed syllables and in unstressed syllables preceding (w) and (y).

('qɑ:kus)	/'qakus/	bamboo
(mʌ'lu:gɑy)	/ma'lugay/	late
('qu:tɑw)	/'qutaw/	man

(ʌ) is a mid open unrounded central vowel. It is found elsewhere.

(mʌ'tas)	/ma'tas/	tall
(mʌlʌ'miq)	/mala'miq/	tasty

/u/ has two allophones (u) and (o).
(u) is a close rounded back vowel.
(o) is a mid close rounded back vowel. (o) is only found in word final syllable except when followed by the same vowel.

(to'qo)	/tu'qu/	true

In word final syllable (o) and (u) are in fluctuation.

(a'ku:)/(a'ko:)	/a'ku/	I
(ma'pa:suq)/(ma'pa:soq)	/ma'pasu/	hot

(u) is found in all non-final syllables.

(qu'bɨ)	/qu'bɨ/	monkey
('kubaw)	/'kubaw/	turban

1.6 Distribution of vowels

1.6.1 There are no word initial vowels.
All vowels occur word medial and word final with the following restrictions:

a) /i/, /ɛ/ and /u/ are not found after /ɨ/.
b) /ɨ/ and /a/ are not found after /ɛ/.
c) When first vowel of a root is /ɨ/, second is most often /ɨ/.
d) When the first vowel of a root is /ɛ/, second is most often /ɛ/.

1.6.2 Vowel-harmony

When /ɨ/ is the result of a reduction from /ala/ and the following syllable had /a/ this is changed to /ɨ/ also.

+malatay	/mɨ'tɨy/	bad
+kalamdag	/'kɨmdɨg/	morning

When the reduction results in /a:/ no change occurs in the following vowel.

+ka'lagan	/'ka:gan/	Kalagan
+ka'ladag	/'ka:sag/	spear

1.6.3 Bisyllabic vowel clusters

The following vowel clusters have been found so far:

V_1 \ V_2	i	ɨ	a	u
i		1	2	3
ɨ			4	
a	5	6		7
u		8	9	

V_1 is initial vowel. V_2 is final vowel.

1	(li'ɨg)	/li'ɨg/	neck
2	('bia)	/'bia/	princess
3	(qi'ug)	/qi'ug/	coconut
4	('qɨa)	/'qɨa/	live
5	('laiŋ)	/'laiŋ/	other
6	(ma'ɨm)	/ma'ɨm/	deep
7	('lauŋ)	/'lauŋ/	speak
8	('luɨ)	/'luɨ/	something
9	(bu'an)	/bu'an/	moon

1.7 Consonant clusters across syllable boundaries

The following consonant clusters have been found across syllable boundaries:

C_1 \ C_2	p	b	t	d	k	g	q	m	n	ŋ	s	l
p												
b		x										x
t			x					x				
d			x									
k	x	x	x			x		x				x
g	x	x	x	x	x	x	x	x	x	x	x	x
q												
m	x	x										
n			x	x	x	x			x			x
ŋ					x	x						
s		x	x		x			x		x		
l									x			x

C_1 is initial consonant.

C_2 is final consonant of cluster.

x geminate.

2. Morphophonemics

2.1 Changes with prefixation

2.1.1 Changes in root initial consonant with plural prefix /min-/.

The nasal of the prefix will be homorganic with following stops, nasals or /s/. The root initial consonant is often lost when it is /b,p,t,k,q,s,n/.

If the stop is glottal, the nasal will be /n/.

miŋ + bis	/mi'mɨs/	'to borrow'
miŋ + dagan	/min'dagan/	'to run'
miŋ + guyud	/miŋ'guyud/	'to pull'
miŋ + kamang	/mi'ŋamang/	'to get(singular actor)
miŋ + kamang	/miŋ'kamaŋ/	'to get(plural actor)
miŋ+ + mamaq	/mimma'maq/	'to chew betelnut'
miŋ + ŋan	/mi'ŋan/	'to call'
miŋ + panaw	/mim'panaw/	'to go'
miŋ + put	/mi'mut/	'to pick'
miŋ + silib	/mi'nilib/	'to spy'
miŋ + talu	/mi'nalu/	'to win'
miŋ + taqun	/min'taqun/	'to defecate'
miŋ + qike	/mi'nike/	'to laugh' (sg.actor)
miŋ + qike	/min'qike/	'to laugh' (pl.actor)

When the initial consonant is /w,y/ and sometimes /s/, the nasal will be velar.

miŋ + walis	/miŋwa'lis/	'to sweep'
miŋ + sɨd	/miŋ'sɨd/	'to attend'
miŋ + yɨgyɨg	/miŋ'yɨgyɨg/	'to rock'

When the initial consonant is /l/, the nasal will be lost, and the /l/ will be geminate.

miŋ + lebes	/mil'lebes/	'to fill abundantly'
miŋ + lua	/mil'lua/	'to escape'

For plural causative action, initial /b/ in the root is assimilated with /m/ in the first syllable.

miŋ + pa + bulak	/mimpa'mulak/	'to blossom'
miŋ + pa + bu a	/mimpa'mu a/	'to bear fruit'

2.2 Changes with suffixation

The object focus suffix is /-ɨn/. But when the preceding vowel is /u/, the suffix changes to /-un/

qubu + ɨn	/qu'bun/	'to cough'

When the suffixes are /ɨn/ object focus$_1$
/-un/ object focus$_1$
/-an/ beneficiary focus$_1$

and the root final vowel is the same as that of the suffix, one long vowel results.

qabe	+	ɨn	(qabi:n)	'weave'
qubu	+	un	(qubu:n)	'cough'
basa	+	an	(basa:n)	'respect'

2.3 Changes with numbers

When cardinal numbers are preceding nouns, /-ŋ ka/ is added to the number. If the number ends with nasa l or plosive /-ɨŋka/ is added.

dua	+	pisos	/du'aŋka'pisos/	'two pesos'
upat	+	pisos	/upa'tɨŋka'pisos/	'four pesos'
ɨnɨm	+	pisos	/ɨnɨ'mɨŋka'pisos/	'six pesos'

In some cases a short form is used. /-ŋ/ is then added to the number. If the number ends with nasa l or plosive /ɨŋ/ is added. The initial glottal stop in /qallaw/ is assimilated with the preceding velar nasal and becomes another velar nasal.

dua	+	qallaw	/duaŋ'ŋallaw/	'two days'
syam	+	qallaw	/syamɨŋ'ŋallaw/	'nine days'
upat	+	qallaw	/upatɨŋ'ŋallaw/	'four days'

Numbers twenty to ninety are made by adding /ka- -an/ to the numbers two through nine. With dua 'two' the following change occurs:

The initial /d/ is lost and the following /u/ is assimilated with the prefix to one long /a/

/ka- -an/	+	dua	(ka:wan)	'twenty'

For thirty, Cebuanu tulo 'three' is used. Here the /u/ is lost, and the resulting form becomes

ka- -an	+	tulo	('katluan)	'thirty'

When the number has an initial glottal, the glottal is lost, and the following vowel is assimilated with the prefix to one long /a/.

ka- an-	+	qupat	('ka:patan)	'forty'
ka- -an	+	qɨnɨm	('ka:nɨman)	'sixty'

2.4 Change with particles (unstressed words)

da 'already' is attracted to aku 'I' and is phonetically one word in the following expression:

(muliq 'da:ku) 'I will go home'

Here the initial glottal in /qa'ku/ is lost and the two a's are assimilated to one long

'manaw + da + kami 'we will go'

Here the particle is attracted to the verb, and a change of stress occurs in the verb:

(ma'nawra kami) 'we will go'

With mina 'be like', the following change occurs:

Preceding ikaw 'you' the final /a/ is lost, and the nasal is made homorganic with the initial consonant of the pronoun which has lost its initial /i/:

mina kabɨg 'like a bat'
(miɳ'kaw na kabɨg) 'you are like a bat'

FOOTNOTES

[1]The author wishes to acknowledge Behrens (1975) as the source of the format used for this paper. Dawson (1958) and Collins (1970) were sources of many specific insights into Kalagan phonology and Gallman (1977) proved quite useful in providing comparative background for this study. Thanks are also due to Gallman for reading an earlier draft of this paper and for giving useful comments thereon.

[2]Words marked with prefixed '+' have been taken from Murray (n.d.). Non-phonemic length is represented for vowels in examples enclosed in non-phonemic parentheses but non-phonemic vowel qualities are represented only where the particular variant of vowel quality is under discussion. The narrower transcription of vowel qualities can be retrieved in all examples through the application of the rules given in Section 1.5.2 Vowels, and in Footnotes 4 and 5. Wherever the symbol /e/ has been used for a vowel phoneme it is synonymous with /ɛ/.

[3]The phonemes /h/ and /r/ are not listed here. They do, however, function in loan vocabulary as contrastive phonemes in their own right.

/h/	hari	'king'
	maghinayhinay	'to do slowly'
/r/	relo	'watch'
	libro	'book'

[4]There is systematic variation of all vowels under stress in utterance-final position which is not listed in the statements of variation for the individual vowels. The variant which occurs in stressed vowels at the end of an utterance can be described as devoicing of the final portion of the vowel.

/mikatɨ/	[mika'tɨɪ]	'itch'
/madɨ/	[ma'dɨɪ]	'bring'

[5]There is a third allophone of /i/ which occurs only in loan words. This allophone is slightly lower, approximating [e]. The spelling of these loanwords is orthographically 'e' following the norms of the source

language, but as far as the phonemic system of Kalagan is concerned, this allophone is to be grouped rather as an additional variant of the phoneme /i/.

/prisidinti/	[presi'dente]	'president'
/hotil/	[ho'tel]	'hotel'
/maistra/	[ma'estra]	'teacher'

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